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Docket No.: 12928/10033; 569.1019
Date: March 16, 2009

In re application of: **Eric LABARRIERE ET AL.**
Application No.: 10/584,165
Filed: June 22, 2006
For: **TERMINAL END-PIECE FOR A FUEL ASSEMBLY HAVING AN ARRANGEMENT FOR MAINTAINING THE ENDS OF THE RODS AND CORRESPONDING ASSEMBLY**

S i r:

Transmitted herewith is an **APPELLANT'S BRIEF UNDER 37 C.F.R. § 41.37** (14 pgs) in the above-identified application.

☒ Also transmitted herewith are:
- ☐ Petition for extension under 37 C.F.R. 1.136
- ☒ Return Receipt Postcard
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☒ Check(s) in the amount of **$540.00** is/are attached to cover:
- ☐ Filing fee for additional claims under 37 C.F.R. 1.16
- ☐ Petition fee for extension under 37 C.F.R. 1.136
- ☒ Other: Filing Fee for an Appeal Brief

☒ The Assistant Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 50-0552.

- ☒ Any filing fee under 37 C.F.R. 1.16 for the presentation of additional claims which are not paid by check submitted herewith.
- ☒ Any patent application processing fees under 37 C.F.R. 1.17.
- ☒ Any petition fees for extension under 37 C.F.R. 1.136 which are not paid by check submitted herewith, and it is hereby requested that this be a petition for an automatic extension of time under 37 CFR 1.136.

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I hereby certify that the documents referred to as attached therein and/or fee are being deposited with the United States Postal Service as "first class mail" with sufficient postage in an envelope addressed to "Mail Stop: APPEAL BRIEF - Patent Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" on March 16, 2009.
DAVIDSON, DAVIDSON & KAPPEL, LLC

BY: Danielle C. Sullivan
Danielle C. Sullivan

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Re:	Application of:	Eric LABARRIERE et al.
	Serial No.:	10/584,165
	Filed:	June 22, 2006
	For:	TERMINAL END-PIECE FOR A FUEL ASSEMBLY HAVING AN ARRANGEMENT FOR MAINTAINING THE ENDS OF RODS AND CORRESPONDING ASSEMBLY
	Art Unit:	3663
	Examiner:	Rick Palabrica

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Alexandria, VA 22313-1450

March 9, 2009

APPELLANT'S BRIEF UNDER 37 C.F.R. § 41.37

Sir:

Appellant submits this brief for the consideration of the Board of Patent Appeals and Interferences (the "Board") in support of their appeal of the Advisory Action dated January 5, 2009 and the Final Rejection dated August 13, 2008 in this application. The statutory fee of $540.00 is submitted concurrently herewith. If any additional fees are deemed to be due at this time, the Assistant Commissioner is authorized to charge payment of the same to Deposit Account No. 50-0552.

1. REAL PARTY IN INTEREST

The real party in interest is Areva NP, a French corporation having a place of business in Courbevoie, France and the assignee of record of the entire right, title and interest in the above-identified patent application.

2. RELATED APPEALS AND INTERFERENCES

Appellants, their legal representatives, and assignee are not aware of any appeal or interference that directly affects, will be directly affected by, or will have a bearing on the Board's decision in this appeal.

3. STATUS OF CLAIMS

Claims 16 to 30 are pending in the application. Claims 16 to 18, 22 to 25 and 28 were rejected in the Final Office Action dated August 13, 2008. Claims 19 to 21, 26, 27 and 30 have been withdrawn. Claims 1 to 15 were canceled.

The rejections to claims 16 to 18, 22 to 25 and 28 thus are appealed. A copy of appealed claims 16 to 18, 22 to 25 and 28 is attached hereto as Appendix A.

4. STATUS OF AMENDMENTS

No amendments have been filed subsequent to the August 13, 2008 Final Office Action.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim 16 recites a terminal end-piece for a fuel assembly of a nuclear reactor (for example, page 5, lines 23 to 29; for example, bottom end-piece 7 and top end-piece 9 in Figure 1), the assembly comprising fuel rods and a skeleton for supporting the fuel rods (for example, page 5, lines 23 to 25; for example, fuel rods 3 and skeleton 5 in Figure 1), the fuel rods extending in a longitudinal direction and being arranged at nodes of a substantially regular

network (for example, page 6, lines 5 to 8; for example, fuel rods 3 in Figure 1), the support skeleton comprising two terminal end-pieces and elements for connecting the terminal end-pieces (for example, page 5, lines 27 to 34; for example, skeleton 5, bottom end-piece 7, top end-piece 9 and guide tubes 11 in Figure 1), the fuel rods being arranged longitudinally between the terminal end-pieces (for example, bottom end-piece 7, top end-piece 9 and fuel rods 3 in Figure 1), comprising: an arrangement for laterally maintaining adjacent longitudinal ends of substantially all the fuel rods, the arrangement configured at nodes of the substantially regular network (for example, page 1, line 30 to page 2, line 2) wherein the maintenance arrangement constitutes an arrangement for longitudinally securing the adjacent longitudinal ends of the fuel rods relative to the terminal end-piece (for example, page 2, lines 11 to 13), and wherein the end-piece comprises two components for longitudinally clamping the adjacent longitudinal ends of the fuel rods between the two components (for example, page 2, lines 14 to 18).

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 16, 17, 22 to 25 and 28 were rejected under §102(b) as being anticipated by U.S. Patent No. 5,490,191 to Christiansen et al. (hereinafter "Christiansen"). Claim 18 was rejected under 35 U.S.C. §103(a) as being unpatentable over Christiansen in view of U.S. Patent No. 5,384,814 to Matzner et al. (hereinafter "Matzner").

7. ARGUMENTS

35 U.S.C. §102(b) Rejections

Claims 16, 17, 22 to 25 and 28 were rejected under §102(b) as being anticipated by Christiansen.

Christiansen et al. discloses a boiling water reactor fuel assembly.

Claim 16 recites "a terminal end-piece for a fuel assembly of a nuclear reactor, the

assembly comprising fuel rods and a skeleton for supporting the fuel rods, the fuel rods extending in a longitudinal direction and being arranged at nodes of a substantially regular network, the support skeleton comprising two terminal end-pieces and elements for connecting the terminal end-pieces, the fuel rods being arranged longitudinally between the terminal end-pieces, comprising:

an arrangement for laterally maintaining adjacent longitudinal ends of substantially all the fuel rods, the arrangement configured at nodes of the substantially regular network, wherein the maintenance arrangement constitutes an arrangement for longitudinally securing the adjacent longitudinal ends of the fuel rods relative to the terminal end-piece, and wherein the end-piece comprises two components for longitudinally clamping the adjacent longitudinal ends of the fuel rods between the two components."

Christiansen fails to teach or show "wherein the maintenance arrangement constitutes an arrangement for longitudinally securing the adjacent longitudinal ends of the fuel rods relative to the terminal end-piece, and wherein the end-piece comprises two components for longitudinally clamping the adjacent longitudinal ends of the fuel rods between the two components," as recited in claim 16. The asserted terminal end pieces are lower tie plate 54 and spring element 55 of Christiansen which laterally restrain the longitudinal ends of the fuel rods: "The fuel rods have been extended down into the lowered fuel rod support plate and are restrained laterally by springs." (Col 5, lines 1 to 3) (emphasis added). "All of the other fuel rods of the fuel assembly can similarly be laterally restrained by springs within bores in the support plate." (Col. 4, lines 61 to 63) (emphasis added). However, the fuel rods clearly can move longitudinally with respect to the tie element 54 and spring element 55. In fact, Christiansen specifically states that the fuel rods are free to move longitudinally. (Col. 1, lines 28 to 32). Therefore Christiansen fails to show "two components for longitudinally clamping" or "an arrangement for longitudinally securing," as recited in claim 16.

The Advisory Action asserts that longitudinal securing exists "after the reactor is assembled and before the reactor is operated when coolant flows through the core." The fuel rods of Christiansen are not "longitudinally secured" at this point and are still free to move longitudinally. The Office Action further asserts that "clearly, if the combination of the lower tie plate 54 and spring element 55 in Christiansen does not provide the claimed 'longitudinal

securing' the fuel rods 52 cannot be held in place as shown in Fig. 5." The fuel rods in this position are not secured longitudinally and once vibrations occur longitudinal movement of the fuel rods is likely to take place. This is not "longitudinal securing." It is clear in Christiansen that movement of the fuel rods is allowed and the fuel rods are only laterally restrained, the fuel rods are free to move longitudinally. (Column 1, lines 28 to 33). ("Allowable movement of the fuel rods relative to the tie plate is controlled by the length of engagement of the fuel rod in the hole and the diametrical clearance. Vibration induced wear is then prevented by the application of an internal spring that supplements the rigid lateral restraint." (Col. 4, line 33 to 46) (emphasis added)). The Advisory Action also asserts that Christiansen broadly includes longitudinal securing because the fuel rods do not fall through the aperture, in a vertical downward movement. When the vibrations occur, the fuel rods in Christiansen can move vertically upwards and downwards which is not "longitudinal securing" as claimed. Christiansen only teaches of lateral restraints. Christiansen does not teach any longitudinal securing or clamping.

The Office Action asserts "the lateral restraints in Christiansen also inherently provides longitudinal restraint." However, it is not inherent that "the lateral restraints in Christiansen also inherently provides longitudinal restraint" and it is still unclear the basis in fact and/or technical reasoning used by the Examiner to reasonably support the determination that the allegedly inherent characteristic necessarily flows from teachings of the applied prior art. MPEP 2112 IV. Lateral restraints need not provide longitudinal securing. Furthermore, as recited in Christiansen, "[a]llowable movement of the fuel rods relative to the tie plate is controlled by the length of engagement of the fuel rod in the hole and the diametrical clearance." (Col. 4, line 33 to 36) (emphasis added). "Longitudinal securing" is not inherent where there is "allowable movement."

Finally, the Office Action and Advisory Action fail to address the limitation of "longitudinal clamping," as required by claim 16.

Withdrawal of the rejection of independent claim 16 under 35 U.S.C. §102 and dependent claims 17 and 22 to 25 is respectfully requested.

Claim 24 Argued Separately

With regard to claim 24, which partially recites "the maintenance arrangement constitutes an arrangement for longitudinally securing the adjacent longitudinal ends of the fuel rods relative to the terminal end-piece, and wherein the end-piece comprises two components that longitudinally clamp between the components the adjacent longitudinal ends of the fuel rods." As discussed above Christiansen fails to teach or show "longitudinal securing the adjacent longitudinal ends of the fuel rods relative to the terminal end piece," and "the end piece comprises two components that longitudinally clamp between the components the adjacent longitudinal ends of the fuel rods." The asserted terminal end piece, lower tie plate 54 and spring 55, laterally restrain.

35 U.S.C. §103(a) Rejections

Claim 18 Argue Separately

Claim 18 was rejected under 35 U.S.C. §103(a) as being unpatentable over Christiansen in view of Matzner.

Christiansen is discussed above.

Matzner discloses a lower tie plate strainer for boiling water reactors.

Claim 18 recites "[t]he end-piece according to claim 16, wherein one of the components constitutes an anti-debris filter."

The combination of Christiansen and Matzner fail to teach or show all limitations of claim 18. Both Christiansen and Matzner fail to teach or show "wherein the maintenance arrangement constitutes an arrangement for longitudinally securing the adjacent longitudinal ends of the fuel rods relative to the terminal end-piece, and wherein the end-piece comprises two components for longitudinally clamping the adjacent longitudinal ends of the fuel rods between the two components," as recited in the independent claim 16, which claim 18 is dependent on. Similar to the discussion above, Christiansen only teaches lateral restraint.

Withdrawal of the rejection of claim 18 under 35 U.S.C. §103(a) as being unpatentable under Christiansen in view of Matzner is respectfully requested.

Furthermore, even if Christiansen and Matzner did teach all the limitations of claim 18, which they do not, there is no reason or motivation for one of ordinary skill in the art to modify Christiansen in view of Matzner. For this reason as well, withdrawal of the rejection to claim 18 is respectfully requested.

CONCLUSION

It is respectfully submitted that the application is in condition for allowance. Favorable consideration of this appeal brief is respectfully requested.

Respectfully submitted,

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APPENDIX A:

PENDING CLAIMS 16 to 30 OF U.S.
APPLICATION SERIAL NO. 10/584,165

Claim 16 (previously presented): A terminal end-piece for a fuel assembly of a nuclear reactor, the assembly comprising fuel rods and a skeleton for supporting the fuel rods, the fuel rods extending in a longitudinal direction and being arranged at nodes of a substantially regular network, the support skeleton comprising two terminal end-pieces and elements for connecting the terminal end-pieces, the fuel rods being arranged longitudinally between the terminal end-pieces, comprising:

an arrangement for laterally maintaining adjacent longitudinal ends of substantially all the fuel rods, the arrangement configured at nodes of the substantially regular network, wherein the maintenance arrangement constitutes an arrangement for longitudinally securing the adjacent longitudinal ends of the fuel rods relative to the terminal end-piece, and wherein the end-piece comprises two components for longitudinally clamping the adjacent longitudinal ends of the fuel rods between the two components.

Claim 17 (previously presented): The end-piece according to claim 16, wherein the maintenance arrangement comprises housings for receiving the adjacent longitudinal ends of the fuel rods.

Claim 18 (previously presented): The end-piece according to claim 16, wherein one of the components constitutes an anti-debris filter.

Claim 19 (withdrawn): The end-piece according to claim 16, wherein the longitudinal securing arrangement comprises projections, to which rings of the adjacent longitudinal ends of the fuel rods are fitted.

Claim 20 (withdrawn): The end-piece according to claim 16, wherein the longitudinal securing arrangement comprises screws that are intended to be engaged in the adjacent longitudinal ends of the fuel rods.

Claim 21 (withdrawn): The end-piece according to claim 16, wherein the longitudinal securing arrangement are snap-fit connections.

Claim 22 (previously presented): The end-piece according to claim 16, wherein the end piece comprises a bottom end-piece and in that the adjacent longitudinal ends are the lower ends of the fuel rods.

Claim 23 (previously presented): The end-piece according to claim 22, wherein the end piece further comprises feet for support on a lower plate of the core of the nuclear reactor.

Claim 24 (currently amended): A fuel assembly for a nuclear reactor, the assembly comprising:

fuel rods; and

a skeleton for supporting the fuel rods, the fuel rods extending in a longitudinal direction and being arranged at nodes of a substantially regular network, the support skeleton comprising:

two terminal end-pieces; and

elements for connecting the terminal end-pieces, the fuel rods being arranged longitudinally between the terminal end-pieces, wherein at least one end-piece is an end-piece according to ~~to~~ claim 16, in that the maintenance arrangement constitutes an arrangement for longitudinally securing the adjacent longitudinal ends of the fuel rods relative to the terminal end-piece, and wherein the end-piece comprises two components that longitudinally clamp between the components the adjacent longitudinal ends of the fuel rods.

Claim 25 (previously presented): The assembly according to claim 24, wherein the maintenance arrangement comprises housings that receive the adjacent longitudinal ends of the fuel rods.

Claim 26 (withdrawn): The assembly according to claim 24, wherein the longitudinal securing arrangement comprises projections provided on the end-piece and rings provided at the adjacent longitudinal ends of the fuel rods and that are fitted to the projections.

Claim 27 (withdrawn): The assembly according to claim 26, wherein the rings comprise relief portions for abutment against one of the components.

Claim 28 (previously presented): The assembly according to claim 24, wherein the adjacent longitudinal ends of the fuel rods comprise widened feet that are clamped between the two components.

Claim 29 (previously presented): The assembly according to claim 24, wherein the longitudinal securing arrangement comprises screws that abut the end-piece and that are engaged in the

adjacent longitudinal ends of the fuel rods.

Claim 30 (withdrawn): The assembly according to claim 24, wherein the longitudinal securing arrangement are configured to secure through a snap fit.

APPENDIX B

Evidence Appendix under 37 C.F.R. §41.37(c)(ix):

No evidence pursuant to 37 C.F.R. §§1.130, 1.131 or 1.132 and relied upon in the appeal has been submitted by appellants or entered by the examiner.

APPENDIX C

Related proceedings appendix under 37 C.F.R. §41.37(c)(x):

As stated in "2. RELATED APPEALS AND INTERFERENCES" of this appeal brief, appellants, their legal representatives, and assignee are not aware of any appeal or interference that directly affects, will be directly affected by, or will have a bearing on the Board's decision in this appeal.